

CLAIM AMENDMENTS

1-20 (cancelled)

21. (new) A method for separating valuable minerals from an ore, comprising:
grinding the ore,
forming a slurry from the ground ore,
measuring an electrochemical potential of the slurry,
separating valuable minerals from the slurry by flotation, precipitation and filtering,
carrying out the grinding, flotation, precipitation and filtering under an essentially closed recirculating gas atmosphere, and
controlling the composition of the recirculating gas atmosphere depending on the measured electrochemical potential.

22. (new) A method according to claim 21, wherein the recirculating gas atmosphere contains an oxidizing gas and the method comprises controlling oxygen content of the recirculating gas atmosphere depending on said measured electrochemical potential.

23. (new) A method according to claim 22, comprising increasing oxygen content of the recirculating gas atmosphere by adding air, oxygen, or oxygen enriched gas to the recirculating gas atmosphere.

24. (new) A method according to claim 21, comprising utilizing suction and underpressure created owing to the rotation of agitation equipment employed in at least one of grinding, flotation, precipitation, and filtering to effect recirculation of the gas atmosphere.

25. (new) A method according to claim 21, comprising feeding a secondary gas to the grinding, flotation, precipitation and filtering steps.

26. (new) A method according to claim 21, wherein the recirculating gas atmosphere contains a reducing gas.

27. (new) A method according to claim 26, wherein the reducing gas is hydrogen sulphide or sulphur dioxide.

28. (new) A method according to claim 21, wherein the step of measuring an electrochemical potential of the slurry comprises measuring an oxidation potential using a mineral electrode.

29. (new) A method according to claim 21, wherein the step of measuring an electrochemical potential of the slurry comprises measuring impedance.

30. (new) A method according to claim 21, wherein the step of measuring an electrochemical potential of the slurry comprises measuring contents of reagents present in the slurry.

31. (new) A method for separating valuable minerals from an ore, comprising:
grinding the ore,
forming a slurry from the ground ore,
separating valuable minerals from the slurry by flotation, precipitation and filtering,
carrying out the grinding, flotation, precipitation and filtering under an essentially closed recirculating gas atmosphere,
measuring content of oxygen in the recirculating gas atmosphere, and
controlling the composition of the recirculating gas atmosphere depending on the measured content of oxygen.

32. (new) A method according to claim 31, wherein the recirculating gas atmosphere contains an oxidizing gas and the method comprises controlling oxygen content of the recirculating gas atmosphere depending on said measured content of oxygen.

33. (new) A method according to claim 32, comprising increasing oxygen content of the recirculating gas atmosphere by adding air, oxygen, or oxygen enriched gas to the recirculating gas atmosphere.

34. (new) A method according to claim 31, comprising utilizing suction and underpressure created owing to the rotation of agitation equipment employed in at least one of grinding, flotation, precipitation, and filtering to effect recirculation of the gas atmosphere.

35. (new) A method according to claim 31, comprising feeding a secondary gas to the grinding, flotation, precipitation and filtering steps.

36. (new) A method according to claim 31, wherein the recirculating gas atmosphere contains a reducing gas.

37. (new) A method according to claim 36, wherein the reducing gas is hydrogen sulphide or sulphur dioxide.

38. (new) A method according to claim 31, wherein the recirculating gas atmosphere contains an oxidizing gas.

39. (new) A method according to claim 38, wherein the oxidizing gas is ozone or chlorine.

40. (new) A method for separating valuable minerals from an ore, comprising:
grinding the ore under an essentially closed recirculating gas atmosphere containing an oxidizing gas and having a partial pressure of oxygen lower than atmospheric air, forming a slurry from the ground ore, and

separating valuable minerals from the slurry by flotation under an essentially closed recirculating gas atmosphere containing an oxidizing gas and having a partial pressure of oxygen lower than atmospheric air.

41. (new) A method according to claim 40, wherein the recirculating gas atmosphere under which grinding takes place contains oxygen and the method comprises measuring content of oxygen in the recirculating gas atmosphere under which grinding takes place and controlling the composition of the recirculating gas atmosphere under which grinding takes place depending on the measured content of oxygen.

42. (new) A method according to claim 40, comprising measuring an electrochemical potential of the slurry and controlling the composition of the recirculating gas atmosphere under which grinding takes place depending on the measured electrochemical potential.

43. (new) A method according to claim 40, wherein the recirculating gas atmosphere under which flotation takes place contains oxygen and the method comprises measuring content of oxygen in the recirculating gas atmosphere under which flotation takes place and controlling the composition of the recirculating gas atmosphere under which flotation takes place depending on the measured content of oxygen.

44. (new) A method according to claim 40, comprising measuring an electrochemical potential of the slurry and controlling the composition of the recirculating gas atmosphere under which flotation takes place depending on the measured electrochemical potential